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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/090,297	03/04/2002	Ronald M. Kubacki	02-105	7834

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EXAMINER

BARRECA, NICOLE M

ART UNIT PAPER NUMBER

1756

DATE MAILED: 10/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/090,297

Applicant(s)

KUBACKI, RONALD M.

Examiner

Nicole M. Barreca

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 13 and 16-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 13 and 16-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. Claims 1-5, 13, 16-28 (directed to Group I) are pending in this application.

Drawings

2. Figures 1 and 2a-2f should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
3. Please note that the pending claims are product-by-process claims. MPEP 2113 teaches that product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. (In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985)) The Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature, than when a product is claimed in the conventional fashion. (In re Fessmann, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974)) Once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. (In re Marosi, 710

F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir.1983)). Therefore the claim limitations directed to how the precursor waveguide material is formed (i.e. from a two component plasma reaction in a substantially air-evacuated plasma chamber, a first component comprising a non-carbon containing and non-oxygenated silicon donor and a second component comprising a non-silicon containing and a non-oxygenated organic precursor) and how the side boundary material is formed (i.e. by exposing the waveguide core to light in the presence of oxygen) are process limitations which do not further limit the product (the optical waveguide). It is the examiner's position that the only limitations implied by these process steps are that the precursor waveguide material comprise silicon and organic components and that the patterned side boundary material additionally comprises an oxygen component.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5 and 20-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Tomaru (JP 06-109936, English translation from JPO).

6. Tomaru discloses a method for making an optical waveguide. The lower clad layer (bottom boundary) is deposited using polysiloxane (A) and the film of polysiloxane (B) are deposited as a core layer. The core layer is exposed to excimer laser light in the presence of oxygen to change the solubility and form a pattern (side boundary). The

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upper clad layer (top boundary) is then laminated to form the embedded three-dimensional optical waveguide. See the abstract and [0028].

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 13, 16-19 and 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dutta (US 5,608,566) in view of Tomaru.

9. Dutta teaches a waveguide structure which is capable of switching a signal in any one of four directions. A multiple quantum well structure 5 (barrier) is sandwiched between upper and lower waveguides 4 and 6. The upper and lower waveguides are sandwiched between upper and lower cladding layers 3 and 7 (col.1, 13-16, col.2, 49-51, col.3, 50-61). Dutta however does not disclose that the waveguide (core) layers 4 and 6 comprise silicon and organic components and one photo-oxidized region. Tomaru teaches that polysiloxane is a good material for use in a waveguide because it has reliable optical properties and may be easily patterned in the presence of oxygen in order to form the waveguide core [0028]-[0030]. It would have been obvious to one of ordinary skill in the art to use polysiloxane for the waveguide material layer in the method of Dutta because Tomaru teaches that polysiloxane has reliable optical properties and may be easily patterned in the presence of oxygen in order to form the waveguide core.

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10. Claims 1-5 and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weidman (US 4,921,321) in view of the applicant's admitted prior art.

11. Weidman teaches an amorphous silicon material which is useful in the fabrication of optical devices. An optical device, including a waveguide (side) region, may be formed which comprises a region of a silicon-containing material formed by the photo-oxidation of polysilene wherein the silicon-containing region has a refractive index that differs from adjacent regions of the waveguides (abstract, col.4, 46-col.5, 19, col.8, 35-62). While Weidman does not explicitly disclose the specifics of waveguide structure, such as the bottom boundary and top boundary layer, the applicant teaches on p.2-3 that a conventional waveguide structure includes in addition to the waveguide core and side boundary layers, a top boundary and bottom boundary layer. It would have been obvious to one of ordinary skill in the art to have the optical waveguide in the method of Weidman to also include in addition to the waveguide core and side boundary, a top boundary and a bottom boundary layer, because the applicant's admitted prior art teaches that these are features are present in a conventional waveguide structure.

12. Claims 13, 16-19 and 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dutta (US 5,608,566) in view of Weidman.

13. Dutta teaches a waveguide structure which is capable of switching a signal in any one of four directions. A multiple quantum well structure 5 (barrier) is sandwiched between upper and lower waveguides 4 and 6. The upper and lower waveguides are sandwiched between upper and lower cladding layers 3 and 7 (col.1, 13-16, col.2, 49-51, col.3, 50-61). Dutta however does not disclose that the waveguide (core) layers 4

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and 6 comprise silicon and organic components and one photo-oxidized region.

Weidman teaches an amorphous silicon material which has a large drop in refractive index when photo-oxidized and is therefore able to produce optical waveguide structures with high resolution. An optical device, including a waveguide (side) region, may be formed which comprises a region a silicon-containing material formed by the photo-oxidation of polysilyne wherein the silicon-containing region has a refractive index that differs from adjacent regions of the waveguides (abstract, col.4, 46-col.5, 19, col.8, 35-62). It would have been obvious to one of ordinary skill in the art to use polysilyne for the waveguide material layers in the method of Dutta because Weidman teaches that polysilyne has a large drop in refractive index when photo-oxidized and is therefore able to produce optical waveguide structures with high resolution.

Conclusion


14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Amano (US 5,672,672) discloses a polymeric optical waveguide using an optical material of polysiloxane. Lackritz (US 2001/0031122) discloses an optical structure fabricated using a photodefinable material. Yamamoto (US 4,711,807) and Endo (US 4,532,150) disclose silicon containing layers formed from silicon containing gases such as SiH_4 or Si_2H_6 and hydrocarbons such as methane, ethane or ethylene. JP 05-025282 and JP 08-049088 disclose organosilicon polymers for use in the fabrication of an optical waveguide. JP 01-126304 discloses a photosensitive polymer that is photo-oxidized during the production of a waveguide.

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15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicole M. Barreca whose telephone number is 703-308-7968. The examiner can normally be reached on Monday-Thursday (8:00 am-6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 703-308-2464. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


Nicole Barreca
Patent Examiner
Art Unit 1756

10/2/03